Batter Up -- U.S. Forest Service Steps Up to the Plate

By James Spartz, Public Affairs Specialist, Forest Products Lab and National Public Radio reports

In 2008, Major League Baseball had a problem with broken bats. That season, bats were breaking into multiple pieces at a higher rate than ever before: around once per game and people were getting hurt.

The problem corresponded with a surge in the popularity of maple bats, used by Barry Bonds and other power hitters, over the traditional ash bats.

Maple bats kept breaking apart and often, they'd break along the handle, sending the heavier upper barrel of the bat flying. A fan named Susan Rhodes was struck by a bat shard during a Los Angeles Dodgers game in April. In June, Brian O'Nora, a home plate umpire, was sent to the hospital after a bat left a gash on the back of his head.

That very day in June 2008, MLB's Safety and Health Advisory Committee had met to discuss the issue. The committee announced that it would consult with bat experts and conduct research with bats and their manufacturers.

One of the first phone calls went to the U.S. Forest Service, which operates a forest products laboratory (FPL) in Madison, Wisconsin, where researchers study things like construction lumber, or ways to use underutilized woods, like the trees killed by pine beetles. The league called up Dave Kretschmann, a research engineer there.

> *"Since 2008, the U.S. Forest Service has worked with Major League Baseball (MLB) to help make America's pastime safer."*
>
> *-Chief Tom Tidwell*

Now fast forward to August 2013 and as Major League Baseball (MLB) slides into their last weeks of the season, U.S. Forest Service Chief Tom Tidwell discussed some MLB-funded research at the Forest Products Laboratory (FPL) that has resulted in significantly fewer shattered baseball bats.

"I'm proud that our collective 'wood grain trust' has made recommendations resulting in a significant drop in shattered bats, making the game safer for players as well as for fans" said Chief Tidwell.

And he hits it out of the park...the bat that is. Forest Products Labratory (FPL) researchers have implemented changes in bat manufacturing that have led to significantly fewer shattered bats, including maple bats.

FPL wood experts examined thousands of shattered bats used by Major League Baseball players.

More...

By testing and analyzing thousands of shattered Major League bats, FPL researchers have implemented changes in bat manufacturing that have led to significantly fewer shattered bats, especially maple bats. Even though maple bats are now more popular than ever among players, the rate of shattered maple bats is less than half what it was five years ago.

"These results would not have been possible without the outstanding work of the Forest Products Laboratory and the tireless efforts of its project coordinator, David Kretschmann," says Daniel Halem, MLB's Senior Vice President of Labor Relations.

In 2008, the joint Safety and Health Advisory Committee of Major League Baseball and the MLB Players Association began working to address the frequency of bats breaking into multiple pieces. FPL research engineer Kretschmann and a team of wood experts looked at every broken Major League bat from July to September during the 2008 season. They found that inconsistency of wood quality, primarily the manufacturing detail "slope of grain," for all species of wood used in Major League bat manufacture was the main cause of broken bats. Also, low-density maple bats were found to not only crack but shatter into multiple pieces more often than ash bats or higher density maple bats. Called multiple-piece failure, shattered bats can pose a danger on the field and even in the stands.

Slope of grain refers to the straightness of the wood grain along the length of a bat. Straighter grain lengthwise means less likelihood for breakage.

About 60,000 baseball bats are sold to Major League players every season. The majority of those bats, 64 and 33 percent, respectively, are maple or ash. The overall rate of maple bats sold to Major League players fell by nearly 10 percent between 2008 and 2010, a time when the popularity of ash bats rose by about the same amount. Orders for maple began to rise during the 2011 season and are now at an even higher percentage of sales than in 2008.

The average number of shattered bats per Major League game (multiple-piece failures) has dropped significantly since 2008 thanks in large part to FPL research.

With the help of TECO, a third-party wood inspection service, the manufacturing changes the Kretschmann-led team established have proven remarkably successful over time. Limits to bat geometry dimensions, wood density restrictions, and wood drying recommendations have all contributed to the dramatic decrease in multiple-piece failures, even as maple's popularity is on the upswing.